



Attitude of Science Teachers towards Project Method

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Abstract: *The project method of teaching is presented as a distinguishing feature of the activity and core pattern of curriculum. This view arose as a reaction against the traditional methods of teaching, which creates monotony, laziness and kills not only the interest but also ignores the natural instinct of children in general. This method helps to achieve the various outcomes of science teaching and in this method teaching-learning takes place in broad framework of network. The present study has implications for the science teachers and teaching of science. Project method makes the understanding of scientific principles easy. The students can go in search of truth and solutions to their queries emerge from their efforts; they can develop scientific attitude. In the present study the teachers have in general positive attitude towards study the teachers have in general positive attitude towards project method of teaching science.*

Abstract: *Teacher, project method, Kothari Commission, man's existence*

Introduction

Impact of Science & Technology is visible everywhere. It influences every aspect of man's existence. Today an understanding of science is useful not only to live successfully but also to gain employment. It is necessary to have knowledge of science for full development of a human being and the environment. Every person should have adequate knowledge about the physical and biological world around him in order to take intelligent decisions for solving personal as well as environmental problems.

According to the Kothari Commission "Science and Mathematics should be taught on a compulsory basis to all pupils as a part of general education during the first 10 years of schooling". The importance of science lies in the fact that no task in our everyday life gets completed without taking help from science; so to make our life easier we

have to study science. Today teachers use textbooks for teaching science and the practice in most schools is to read aloud. The fate of practical work is alarming; if done it is done in a routine way in the laboratories. It is not process of investigation but like a ritual done in the most dull and monotonous manner. There is no coordination between theory and practical work. Less knowledge about application of science makes it a dull affair. It is merely a confirmation that has been read aloud. Thus, the very initiative is killed. The student has not learnt any skill or technique for better understanding of problems in science. After going through the science education in various institutions it has been concluded that all is not well with our science teaching.

Various methods of teaching science such as Lecture Method, Lecture-cum-demo Method, Heuristic Method, Problem – Solving Method and Project Method has been advocated from time to



time and each method has its own merits and demerits. In India also in most of the institutions science is taught through lecture method and laboratories are not available for conducting experiments. Thus students are unable to develop understanding of science, which is going to become a big problem for teachers as well as students.

The most appropriate instructional approach that a science teacher can use to teach science for understanding is Project-based Science Instruction (PBSI), which makes science classrooms mini experimental stations, research laboratories and scientific agencies. This method helps the children to organize their knowledge in a scientific manner.

The best way to implement PBSI is to tie it to a standard, unit, curriculum, and program or after school science program. If a science teacher wants to teach science through PBSI, the following steps should be followed:

1. Administer a pre-assessment to determine students' knowledge, process skills and dispositions in the specific subject, theme or topic. Introduce the students to the PBSI approach. Stress that the central driving instructional force in PBSI is purposeful learning driven by students' own questions.
2. Emphasize that collaboration is a must in PBSI. This is because most scientific investigations require collaboration in tasks such as fieldwork, instrument development and testing, and collection of data.
3. Discuss the advantages as well as the disadvantages of working in groups. However, emphasize that the

advantages of working in group outweigh its disadvantages.

4. Note that as they work in groups, they will have to complement each other's weaknesses with each other's strengths, make constructive criticism as opposed to destructive criticisms, and take collective responsibility as opposed to individual responsibility.
5. Divide the class into small manageable groups. Groups of three or four tend to work better than larger groups. Where possible, make sure that each group is balanced in terms of gender, ethnicity, race, academic ability and socioeconomic background. Tell students that they will be working in their groups throughout and as young scientists they will be required to work collaboratively and divide the responsibility among themselves.
6. Explain that each group is required to identify a question that they will investigate within a specific subject, timeframe, resources and context. Review each question with the individual groups to make sure that they are well defined and focused.
7. Ask each group to present their research questions. During the presentation, encourage the groups to evaluate each other's research question by using the following criteria: (a) Can we investigate their question in the time allowed? (b) Can we investigate this question with the resources available? (c) will the answers to our question serve useful purpose? (d) Is our question new or old? If old, how can we recast it to learn something new?
8. Ask each group to brainstorm and come up with a research plan. Research plans should include



research question, procedure, tools and materials required, time required to complete the project, roles and responsibilities.

9. Discuss with the students a collective timetable in which to begin and complete their projects. Identify periods and times for whole class work and individual group work.
10. Ask each group to implement its research plan. This will include identifying and selecting instruments and tools, collecting and recording data. Monitor, mentor, advise assist and facilitate group activities and keep a mental record of each group's progress. Provide extra help for struggling groups and encourage between group's interaction, dialogue and sharing of idea.
11. Discuss the basic methods of analyzing quantitative and qualitative data provide students with simple chart showing types of data and possible ways of analyzing them. Provide students with a template/format for report writing and discuss rules of scientific writing.
12. Discuss the protocol of presentation and criteria that will be used for evaluation project reports. Ask students to present their reports for peer review. Ask students to reflect in writing what they knew prior to and after conducting their project in terms of knowledge, skills and dispositions on the specific subject, theme or topic.
13. Administer post-assessment.

Statement of Problem

The problem of study has been stated as follows:

A comparative study of attitude of government-aided schools and public schools science teachers towards project method

Objectives of Study

- To study the significance of difference in the attitude of male and female science teachers towards project method.
- To study significance of difference in attitude of public and government – aided schoolteachers towards project method.
- To study the significance of difference in the attitude of science teachers having experience below 10 yrs and between 10-20 years.
- To study significance of difference in attitude of science teachers towards project method teaching secondary classes and senior secondary classes.

Hypotheses

The main hypotheses relating to the problem are stated below based on null.

- ❖ There is no significant difference in the attitude of male and female science teachers towards project method.
- ❖ There is no significant difference between the attitude of public school science teachers and government aided school science teacher towards project method.
- ❖ There is no significant difference in the attitude of science teachers having experience below 10 years and between 10-20 years towards project method.
- ❖ There is no significant difference in the attitude of science teachers taking secondary classes and senior



secondary classes, towards project method.

Significant of Study

The project method of teaching is presented as a distinguishing feature of the activity and core pattern of curriculum. This view arose as a reaction against the traditional methods of teaching, which creates monotony, laziness and kills not only the interest but also ignores the natural instinct of children in general. This method helps to achieve the various outcomes of science teaching and in this method teaching-learning takes place in broad framework of network.

The fact that learning to "explain ideas in science" as well as to evaluate arguments based on scientific evidence" were given less emphasis at all levels suggests that students may be learning science without actually understanding it teachers in a project-based science instruction performed the function of facilitators, mentors, resource persons, advisors, scientists, listeners, learners, scientists, listeners, learners and leaders in the science classroom.

Project-based science instructions is the only approach that places full responsibility for learning on students; as such they are more likely to take it seriously and rise up to the challenge than if they are spoon fed, feel marginalized or powerless'. In a project-based science classroom students develop understanding of science.

Project method stimulates the interest in science and helps in developing personality traits like persistence, self-confidence, cooperation, leadership, emotional stability and

problem-solving ability. It is a compound method, which can lead to effective teaching and learning. So keeping in view the importance of project method in teaching of science and its present status the investigator has undertaken this study with a view to find out present status of project method in teaching of science at school level.

Delimitations of Study

- ✓ The study is restricted to 200 science teachers of Yamuna Nagar district only.
- ✓ It is delimited to 50 schools out of which 15 schools were public schools and 35 schools were government aided schools.
- ✓ The study includes 100 government-aided school science teachers and 100 public school science teachers.
- ✓ The study includes 50 males science teachers and 50 females science teachers from government-aided schools.
- ✓ The study includes 50 male and 50 female teachers from public schools.

Study's Design

The present study is survey type in nature. To begin with survey method was considered appropriate. The present study aimed at "A comparative study of attitude of government aided and public school science teachers towards project method." The population of the study was the government aided and public school science teachers of Yamuna Nagar district. Samples of 45 teachers of Yamuna Nagar district were selected at random. Due to practical difficulty the sample taken in some areas is an incidental one. The sample of 100 science teachers from government-aided schools



and 100 science teachers from public schools were selected. Out of these 50 teachers were male and 50 teachers were female from each type of school. Thus, the sample was selected by using stratified random sampling of equal allocation. Keeping the nature of problem in view, the main tool for collecting data is the questionnaire. The investigator herself prepared a teacher questionnaire for collecting the data. In addition to the questionnaire interview technique was used to have a preliminary idea of the attitude of teachers towards project method. Thus, the tool used in the present study is teacher's questionnaire. The investigator, keeping in view the objectives of study, prepared the teacher questionnaire. It contains 24 items, which were optional in nature and has three choices.

Procedure of the study

The investigator visited the school personally and contacted the teachers. They were told that the questionnaire was only a help to the investigator in research study. Enough time was given to the teachers for filling up the required data. The filled questionnaires were collected from teachers by visiting the schools again. In each question the most positive option has 3 marks and the neutral option has two marks and negative option has 1 mark. It is a comparative study; so only t-test is used to compare the science teacher's attitude towards project method of teaching science of various groups.

Analysis and Results

For the purpose of comparison t-ratios were computed.

S.No	Group	N	M	S.D	SED	t-ratio	Level of Significant
1	Male Science Teacher	100	53.1	1.889	0.23	2.53	0.01
2	Female Science Teacher	100	52.5	1.452			

Table 1

Degree of Freedom $N_1 + N_2 - 2 = 98$

Table value of t-ratio 1.97 at 0.05 level of significance

2.60 at 0.01 level of significance

Interpretation

It can be observed from the table that calculated value of t-ratio is less than table value at 0.01 level significance. Thus null hypothesis is accepted. It indicates that there is no significant difference between attitude of male and female science teachers toward project method of teaching science.



Our result shows that there is no significant difference in the attitude of science teachers towards project method of teaching science. However slight difference between mean score can be due to chance factor or sampling errors.

S.No.	Group	N	M	S.D	SED	t-ratio	Level of Significant
1	Govt. Aided School Science Teacher	100	51.5	1.824	0.2454	10.83	0.01
2	Public School Science Teacher	100	54.1	1.642			

Table 2

Degree of Freedom $N_1 + N_2 - 2 = 98$

Table value of t-ratio 1.97 at 0.05 level of significance

1.60 at 0.01 level of significance

Interpretation

It is observed from the table that the calculated value of t-ratio is greater than the table value; thus null hypothesis can be rejected. This indicates that there is significant difference between the attitudes of government aided school science teachers and public school science teachers towards project method of teaching science.

The probable reason for having higher Mean scores of public school science teachers should be due to:

- Lack of facilities like well equipped laboratory and study material. Moreover no new technologically advanced method of teaching due to lack of resources.
- Secondly. Government-aided school science teachers are given many

other responsibilities besides teaching due to which they don't get enough time for teaching in classroom.

- In government-aided schools. Student teacher ratio is quite high and this also causes overburden on teachers, which results in less positive attitude towards project method.
- Poor financial condition also results in decrease in score or causes less positive attitude towards project method.

The probable reason for having higher Mean score for public school science teacher is because of their insecure job when compared to government – aided school teachers who have secure jobs.

S.No	Group	N	M	S.D	SED	t-ratio	Level of Significant
1	Teacher with below 10 year experience	140	52.6	1.824	0.2602	1.53	0.01
2	Teacher with 10-20	60	53.0	1.624			



	years experience						
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Table 3

Degree of Freedom $N1 + N2 - 2 = 98$

Table value of t-ratio 1.97 at 0.05 level of significance

2.60 at 0.01 level of significance



Interpretation

It is observed from the table that the calculated value of it is less than table value. Thus null hypothesis is accepted. It indicates that there is no significant difference in the attitude of less experienced (less than 10 years) and more

experienced teachers (more than 10 years) towards project method of teaching science.

Thus the slight difference in Means of scores of the above two groups of teachers could be due to chance factor or sampling error.

S.No.	Group	N	M	S.D	SED	t-ratio	Level of Significant
1	Teacher taking Sr.Sec.Classes	82	53.2	1.72	0.2424	3.30	0.01
2	Teacher Taking Secondary Classes	118	52.4	1.640			

Table 3

Degree of Freedom $N_1 + N_2 - 2 = 98$

Table value of t-ratio 1.97 at 0.05 level of significance

2.60 at 0.01 level of significance

Interpretation

It can be observed from the table that t-ratio of Mean score is more than the table value.

Thus the null hypothesis can be rejected and it shows that there is significant difference in the attitude of science teacher taking senior secondary classes and secondary classes. Students of higher classes have greater problem-solving ability and teachers also have knowledge of techniques, which can be used in the project method. In the examination system also evaluation fro project work is an integral part of senior secondary classes only. These can be the probable factors causing difference in Mean of scores.

Main Conclusions

Main conclusions are the following:

- There is no significant difference in the attitude of male and female science teachers towards project method of teaching science.
- There is a significant difference in the attitude of public school and government aided school science teachers towards project method of teaching science.
- There is no significant difference in the attitude of science teachers having experience below 10 years and 10-20 years towards project method.
- There is significant difference in the attitude of science teachers towards project method taking secondary classes and senior secondary classes.



Educational Implications

The most outstanding characteristic of any research is that it must contribute something new to the development of the area concerned. So the investigator has to find out the educational implications of his/her study.

The present study has implications for the science teachers and teaching of science. Project method makes the understanding of scientific principles easy. The students can go in search of truth and solutions to their queries emerge from their efforts; they can develop scientific attitude. In the present study the teachers have in general positive attitude towards study the teachers have in general positive attitude towards project method of teaching science. But due to lengthy syllabus, financial strains and overburdened teachers, it is not mostly used in teaching of science. So to develop the interest to teachers towards project method of teaching science the following measure should be taken.

- Refresher courses, seminars and workshops should be organized on project method of teaching science for science teacher.
- The teacher should not be overloaded with extra work like census etc.
- The teachers should get appropriate funds so that they can utilize them in different projects conducted by students.
- The students should be given proper awards or incentives for their outstanding project work.
- Teachers should also get some incentives like certificates, increments etc. to guide the students in science projects.

The above measures, if given due consideration, can bring about a desirable change in the attitude of science teachers towards project method which would in turn, foster the scientific outlook amongst teachers and students.

REFERENCE

- Ahluwalia S.P. (1978) Teacher Attitude Scale. National Psychological Corporation, Agra.
- Beall, J.& Piron, L.H. (2004) DFID Scoical Exclusion Review. LSE/ODI, London.
- Bunsen, D.M. (1968) A Comparison of Methods of Science in Service Education for Elementary Teachers utilizing the American Association for the Advancement of Science: A Process Approach Material. (Eric Document Reproduction Service No:ED 031393).
- De Haan, A. & Maxwell, S.(Eds.) (1998) Poverty and social exclusion in North and South. IDS Bulletin 29, 1.
- Zeithlyn, S. (2004) Social Exclusion in Asia – Some Initial Ideas. DFID, London.